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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,891	12/11/2000	Kimio Hagi	50090-250	2930

7590 03/27/2003

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EXAMINER

RODRIGUEZ, ISABEL

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/732,891

Applicant(s)

HAGI, KIMIO

Examiner

Isabel Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 5-8 is/are allowed.
- 6) ☒ Claim(s) 3 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagao in view of Hoinkis et al. (US 5,872,694).

Nagao et al. discloses an electrostatic chuck system (Fig. 5) comprising: an electrostatic chuck having an electrode (15), a power supply (6, 10), and a voltage control section (8) for controlling and increasing or decreasing the applied voltage stepwise. See col. 2 lines 33-36. Nagao et al. does not disclose a warpage sensor. Hoinkins et al. discloses an electrostatic chucking system (10) comprising a warpage sensor (20) wherein a signal from sensor is input to a voltage control section (18) to control the applied voltage. See Fig. 1. Warpage varies from wafer to wafer. By sensing the warpage an optimum chucking voltage for each wafer to an electrostatic chuck can be determined. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a warpage sensor to provide an optimum chucking voltage and substantially avoid excessive amounts of backside abrasion and scratching of the wafer while it is being processed. See col. 2 lines 31-38.

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3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagao in view of Hunter (US 6,244,121).

Nagao et al. discloses an electrostatic chuck system (Fig. 5) comprising: an electrostatic chuck having an electrode (15), a power supply (6, 10), and a voltage control section (8) for controlling and increasing or decreasing the applied voltage stepwise. See col. 2 lines 33-36.. Nagao et al. does not disclose a distance sensor. Hunter discloses an electrostatic chucking system comprising a distance sensor wherein a signal from sensor is input to said voltage control section to control the applied voltage. See col. 9 lines 60-62. It would have been obvious to one of ordinary skill in the art at the time the invention was made use a distance sensor to determine the separation distance because the distance sensor is to ensure that the wafer surface is both parallel to and at the proper distance from the target. By doing this, the sensor is avoiding damage to the wafers for improper alignment. Another benefit of the distance sensor disclosed by Hunter is that if the cost needs to be reduced the weight of the distance probe may be increased, thus, being more cost efficient. See col. 9 lines 60-62 and col.10 lines 4-5.

Allowable Subject Matter

4. Claims 2 and 5-8 are allowed.
5. The following is a statement of reasons for the indication of allowable subject matter:

Claims 2 and 5-8 recite, inter alia, an electrostatic chucking system comprising an electrostatic chuck, a power supply, and a voltage control section wherein the applied voltage is controlled such that a rate at which the temperature change of the semiconductor substrate falls within a range of 10-150 °C/sec.

The references of record do not teach or suggest the aforementioned limitation, nor would it be obvious to modify those references to include such limitation.

Response to Arguments

6. Applicant's arguments with respect to claims 3 and 4 have been considered but have not been persuasive.

Regarding applicant's argument that the examiner has failed to provide any motivation to replace the temperature sensor of Nagao with the warpage measurement tool of Hoinkins, applicant is reminded of benefits of warpage measurement tool as disclosed by Hoinkins, such as, substantially avoiding excessive amounts of backside abrasion and scratching of the wafer while it is being processed. See col. 2 lines 31-38. Hoinkins teaches the benefits of using a warpage sensor for controlling the applied voltage. The combination of Hoinkins with Nagao relies solely in this feature of Hoinkins for which the benefit has been established. This combination does not specify that Nagao in view of Hoinkins will include other teachings or features of Nagao, thus, not requiring all features of Nagao to be equivalent to the features of the system of Hoinkins. The system disclosed by Nagao will not need to use the warpage data at the specific time as disclosed by Nagao. The system of Hoinkins will not need to apply the voltage in a step-wise manner. For further details see rejection above.

Regarding applicant's arguments that Hunter fails to disclose the claimed distance sensor, applicant is reminded of the distance probe disclosed in col.9 lines 60-67. After the sensors determine the distance from and angle of inclination between the probe and the target, it is

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inherent that this information needs to be sent in the form of a voltage as a control signal so that the wafer is both parallel and at the proper distance.

Regarding applicant's argument that the proposed motivation is insufficient, the examiner has further expanded motivation to better describe the benefits of having a distance sensor and why would a person skilled in the art would want to include such feature. Applicant is further reminded that under 35 USC § 103 a patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Conclusion

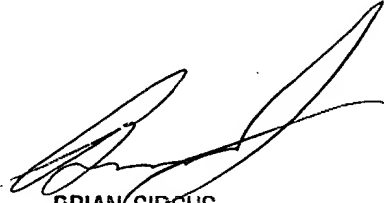
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isabel Rodriguez whose telephone number is 703-305-4761. The examiner can normally be reached on M-F 8:30-5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 703-308-3119. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7724 for regular communications and 703-308-7704 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

IR
March 23, 2003



BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800